

**HONEYWELL INTERNATIONAL INC.
DELAWARE VALLEY WORKS
CLAYMONT, DELAWARE**

Prepared for:

Honeywell
Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07960

Prepared By:

 **MACTEC**

MACTEC Engineering and Consulting, Inc.
1787 Sentry Parkway West, Suite 120
Blue Bell, PA 19422

September 14, 2009



engineering and constructing a better tomorrow

September 14, 2009

Mr. Russel Fish
RCRA Operations Branch 3WC23
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

RE: AOC 16NP
Delaware Valley Works – North Plant
Claymont, Delaware
3485080308

Dear Russ:

On behalf of Honeywell International Inc. (Honeywell) MACTEC Engineering and Consulting, Inc. (MACTEC) is submitting three (3) copies of the AOC 16NP Investigation and Delineation Work Plan for your review and approval. You will note that we have renamed the area in accordance with your comments.

Please contact Richard Karr at 215-619-0292 x226 if you have any questions during your review.

Sincerely,
MACTEC Engineering and Consulting, Inc.

A handwritten signature in cursive script, appearing to read "M. Flanik w/permission from".

Michael D. Flanik
Staff II

A handwritten signature in cursive script, appearing to read "Richard C. Karr".

Richard C. Karr, P.G.
Principal Geologist

cc: Michael Macheska II – DNREC (1 copy)
Prashant Gupta - Honeywell
Nelson Johnson – Arnold & Porter

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1.0 INTRODUCTION

On behalf of Honeywell International Inc. (Honeywell), MACTEC Engineering and Consulting, Inc. (MACTEC) has prepared this Work Plan for the investigation and delineation of contaminated soil and groundwater identified during foundation excavations in December 2008 at the Delaware Valley Works (Site) located in Claymont, Delaware (Figure 1). The area in question was originally designated as Area of Concern (AOC) 16 in the draft Work Plan submitted to USEPA on June 10, 2009. Pursuant to EPA comments received by letter dated September 2, 2009, and to avoid confusion with AOC16 on General Chemical's adjacent South Plant property, the area has been renamed and will be referred to as AOC 16NP in the remainder of this Work Plan. This document provides a brief summary of the current information concerning AOC 16NP, and outlines the proposed investigation and delineation program.

This investigation is a continuation of the RCRA Facility Investigation underway at the Site. The detailed procedures in Section II, Sample Collection Methods and Procedures Plan (SCMPP) and Section III – Quality Assurance Project Plan (QAPP) of the Facility Lead RCRA Corrective Action Revised Workplan (CAWP) for the Honeywell Claymont Facility (October 2002) are referenced and incorporated herein.

2.0 PROJECT BACKGROUND

The Honeywell Delaware Valley Works has been in operation for nearly 100 years. The Site is located in a heavy manufacturing area, and is bisected by the Delaware – Pennsylvania border. It is surrounded by the Sun Oil Refinery to the north and east, the Epsilon Chemical Company to the northeast, the Amtrak rail line to the northwest, and the inactive General Chemical LLC property to the south.

On December 4, 2008, while Site workers were excavating to install a concrete mat foundation, an area of debris (that appeared to be a drum carcass and assorted demolition debris (brick shards, wood, etc.) was uncovered (Figure 2). Liquid collecting in the excavation, at a depth less than 3 feet below ground surface (bgs), appeared impacted by potentially hazardous constituents. Historical Site data suggest an expected depth to groundwater in this vicinity of 8 feet to 10 feet bgs. The construction was halted and the excavation was backfilled.

The following morning, MACTEC mobilized to the Site, re-opened the excavation and collected a sample (with a duplicate) of the liquids. A separate phase was not noted in the liquids sample. Analytical results indicate that the liquid is likely groundwater with concentrations of benzene, chlorobenzene, n-nitrosodiphenylamine, alpha-BHC, 4,4'-DDD, and 4,4'-DDT above 10,000 µg/L (micrograms per liter) (Table 1).

Observations of a silty-clay layer at a depth of approximately 5 feet bgs during the foundation excavation were confirmed by review of historical boring logs in the vicinity. This information supports the conclusion that the liquids sampled from the excavation were impacted groundwater. The groundwater appears to be perched on the upper surface of the silty-clay layer and not continuous with the deeper groundwater, because the groundwater was encountered at such a shallow depth (i.e., approximately 3 feet bgs).

One week after the groundwater analytical results were received, as a precaution, Honeywell installed a slotted pipe to a depth of approximately 5 feet below ground surface (bgs) to form a temporary water collection sump and began to extract and collect groundwater. This measure was taken to remove potential liquids other than groundwater that might be present if a release had occurred because of the excavation. The materials excavated to install the sump were containerized in drums for disposal. The analytical data to support disposal characterization is provided in Table 2

On a weekly basis, the sump was purged dry with the extracted groundwater collected in a 300 gallon polyethylene tote for disposal. This collection operation was concluded on January 6, 2009 after collection of approximately 250 gallons of impacted groundwater. No separate phase materials have been observed in the collected groundwater.

On January 21, 2009, MACTEC conducted a geophysical survey using ground penetrating radar (GPR) and electromagnetic (EM) measurement equipment over an approximate area of 90 feet x 55 feet surrounding the original excavation. The GPR survey was conducted along continuous 55 foot long transects running from east to west at 10 foot intervals with a survey grid on 10 foot centers established over the survey area. Subsurface anomalies identified within the survey area were recorded and mapped (Figure 3). This information was used to select locations for the intrusive investigation activities outlined in Section 3.0.

Honeywell will implement the work scope outlined in Section 3.0 to further investigate and delineate the extent of AOC 16NP. Any additional steps that are necessary will be developed with the concurrence of USEPA Region III.

3.0 SCOPE OF WORK

The extent of AOC 16NP will be further delineated by test pits excavated through the soils using a backhoe with sampling and analysis, and the groundwater will be evaluated using a geoprobe rig with sampling and analysis.

3.1 Test Pit Investigation

Within the AOC 16NP area, four (4) test pits will be excavated along its projected boundaries (Figure 4) as identified during the geophysical surveys. Except as noted below, test pit excavation and sampling procedures will be in accordance with Section 3.2 of the CAWP SCMPP and Section 4.3 of the CAWP QAPP.

The test pits will be excavated to a total depth of four (4) to five (5) feet below the surface or to the top of the confining clay layer, whichever comes first. Test pits will be excavated such that they run perpendicular to and intersect the projected boundary of the AOC 16NP materials (Figure 4).

The soil excavated from the test pits will be screened with a photo ionization detector (PID), and at least two (2) samples of soil/fill materials will be collected from each test pit based upon visual observations and PID readings. Samples for Target compound List (TCL) volatile organic compound (VOC) analysis will be collected using 5 gram Encore samplers and transferred to methanol preserved vials for laboratory analysis in accordance with Section 3.2 of the CAWP SCMPP and Section 4.3 of the CAWP QAPP. Samples for TCL semi-volatile organic compounds (SVOCs) and TCL pesticide analysis will be collected in 12 ounce wide mouth bottles. Samples for TAL metals analysis will be collected in 8 ounce wide mouth bottles. Samples will be preserved by cooling to 4° C for transport under custody seal to the analytical laboratory.

Except as noted herein, all sampling handling and analytical methodologies and procedures, as well as quality assurance /quality control (QA/QC), will be in

accordance with the CAWP QAPP. The collected soil samples will be submitted for laboratory analysis for TCL VOCs via SW846 Method 8260, TCL SVOCs via SW846 Method 8260, TCL pesticides via SW 846 Method 8081A and TAL metals via SW 846 Methods 200.8/7000 series/6020. Standard turn-around-time will be requested.

Logs of geologic, visual observations and PID measurements will be prepared for each test pit location and documentation will be in accordance with Section 5.0 of the CAWP SCMPP. The test pits will be located by measurement to the nearest fixed landmarks on the Site.

All materials excavated from the test pits will be returned to the test pits as backfill, graded level and raked smooth. The test pit locations will be seeded with a lawn mixture. All investigation derived waste will be managed in accordance with Section 7.0 of the CAWP SCMPP.

3.2 Geoprobe Investigation

To evaluate the nature of and impacts to perched groundwater within AOC 16NP, a series of geoprobe borings will be advanced to the top of the silty clay layer or a depth of 6 feet, whichever comes first. Care will be taken not to advance through and perforate the silty clay layer. Four (4) geoprobe borings are planned; their proposed locations are depicted on Figure 4. The geoprobe borings will be advanced in accordance with Section 3.1. of the CAWP SCMPP, and temporary monitoring wells will be installed in the borings. Logs of geologic observations, other visual observations, and PID measurements will be prepared for each geoprobe location.

Except as noted herein, the temporary well installation and development, and equipment decontamination will be in accordance with Section 3.4, 3.5 and 6.0 respectively, of the CAWP SCMPP. Temporary 1-in I.D. pre-packed monitoring wells will be installed within each geoprobe boring. Because these are temporary monitoring wells and their small diameter prevents introduction of a submersible

pump, the wells will be developed by surging and bailing with a Teflon bailer or by use of a peristaltic pump. All other procedures and criteria for well development specified in Section 3.5 of the CAWP SCMPP will be followed. Development water will be containerized and disposed in accordance with Section 7.0 of the CAWP SCMPP.

Within two (2) weeks of installation, the temporary monitoring wells will be sampled using low flow methods (i.e., less than 500 ml/min flow rate). Except as noted below, sampling of the temporary monitoring wells, sample handling and preservation will be in accordance with Section and 3.7 of the CAWP SCMPP. Low flow sampling of the temporary wells will be conducted using a peristaltic pump. Samples will be preserved by cooling to 4° C for transport under custody seal to the analytical laboratory. Purge water will be containerized and disposed in accordance with Section 7.0 of the CAWP SCMPP.

Except as noted herein, all sampling handling, preservation, and analytical methodologies and procedures will be in accordance with the CAWP QAPP. Collected groundwater samples will be submitted for laboratory analysis of VOCs via SW846 Method 8260, SVOCs via SW846 Method 8260, pesticides via SW 846 Method 8081, and RCRA metals via SW 846 Methods 200.8/7000 series/6020. Metals samples will be field filtered. Standard turn-around-time will be requested.

Following sampling, the temporary monitoring wells will be removed and the borings sealed. Upon receipt of the analytical data, Honeywell may recommend the installation of permanent monitoring wells proximal to or within AOC 16NP.

3.3 Quality Assurance

Identification of all collected samples will utilize an alpha-numeric code in accordance with the sample designation system outlined in Section 2.0 of the WP SCMPP. Except as noted herein, all project QA/QC, will be in accordance with the CAWP QAPP.

Specific field quality assurance samples to be collected during this task will be at the following minimum frequencies:

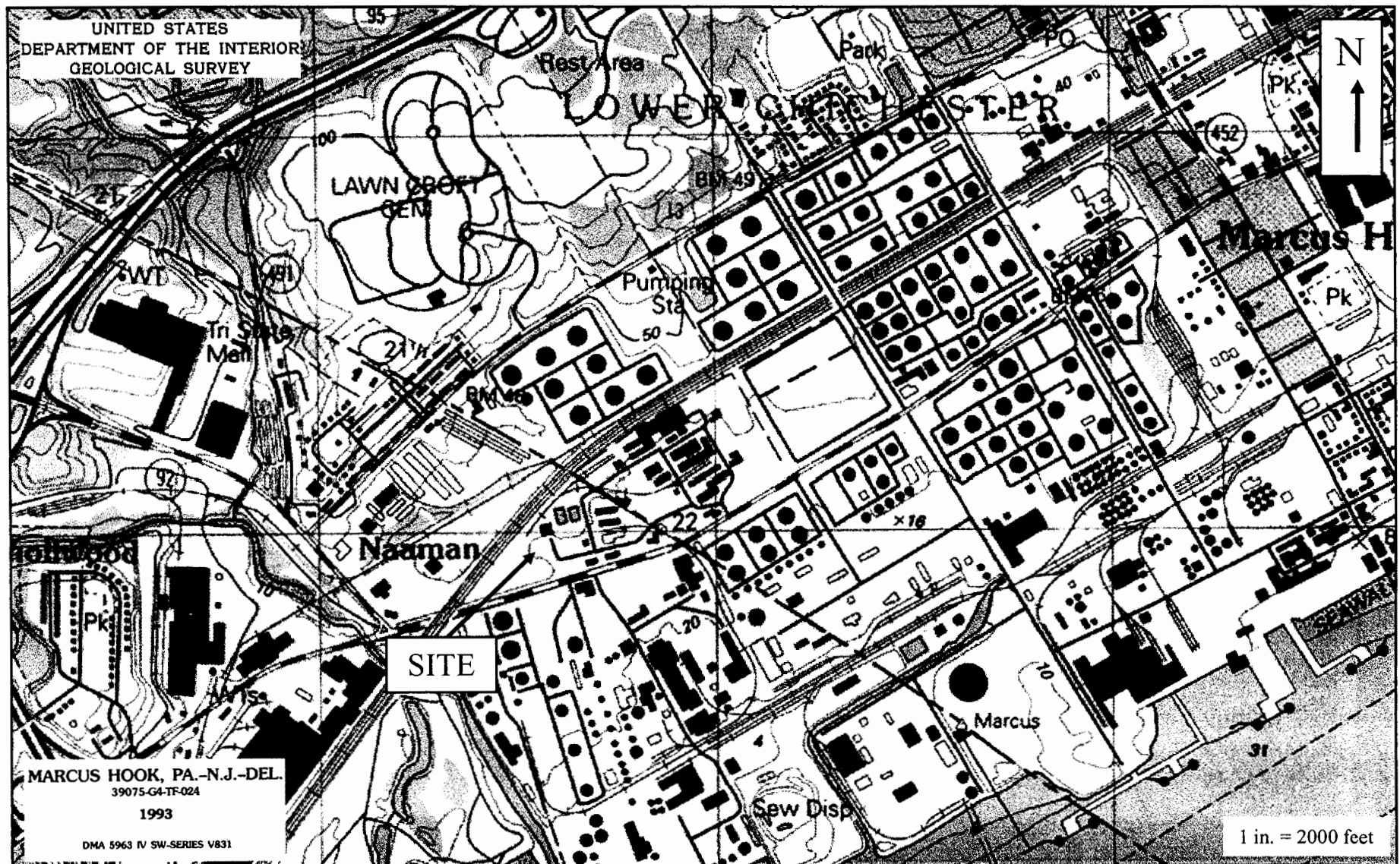
<u>Sample Type</u>	<u>Frequency</u>
Duplicate Samples	10% of all samples
Field Rinsate Blanks (groundwater only)	10% of all samples
Trip Blanks	One per cooler

3.4 Reporting

A draft report of the findings and data will be prepared and submitted to the USEPA. The report shall summarize the methodologies used, the data collected, and any problems encountered. The data shall be depicted in tabular summary format and in a graphical format that identifies the sample locations on the Site.

4.0 SCHEDULE

MACTEC will commence mobilization within 20 business days of US EPA's approval of this work plan contingent upon subcontract driller availability. Actual onsite field work will be completed in a total of three days or less. The report of findings will be submitted 45 business days after analytical results are received from the analytical laboratory.



Prepared By: MF
Checked By: RK

Honeywell

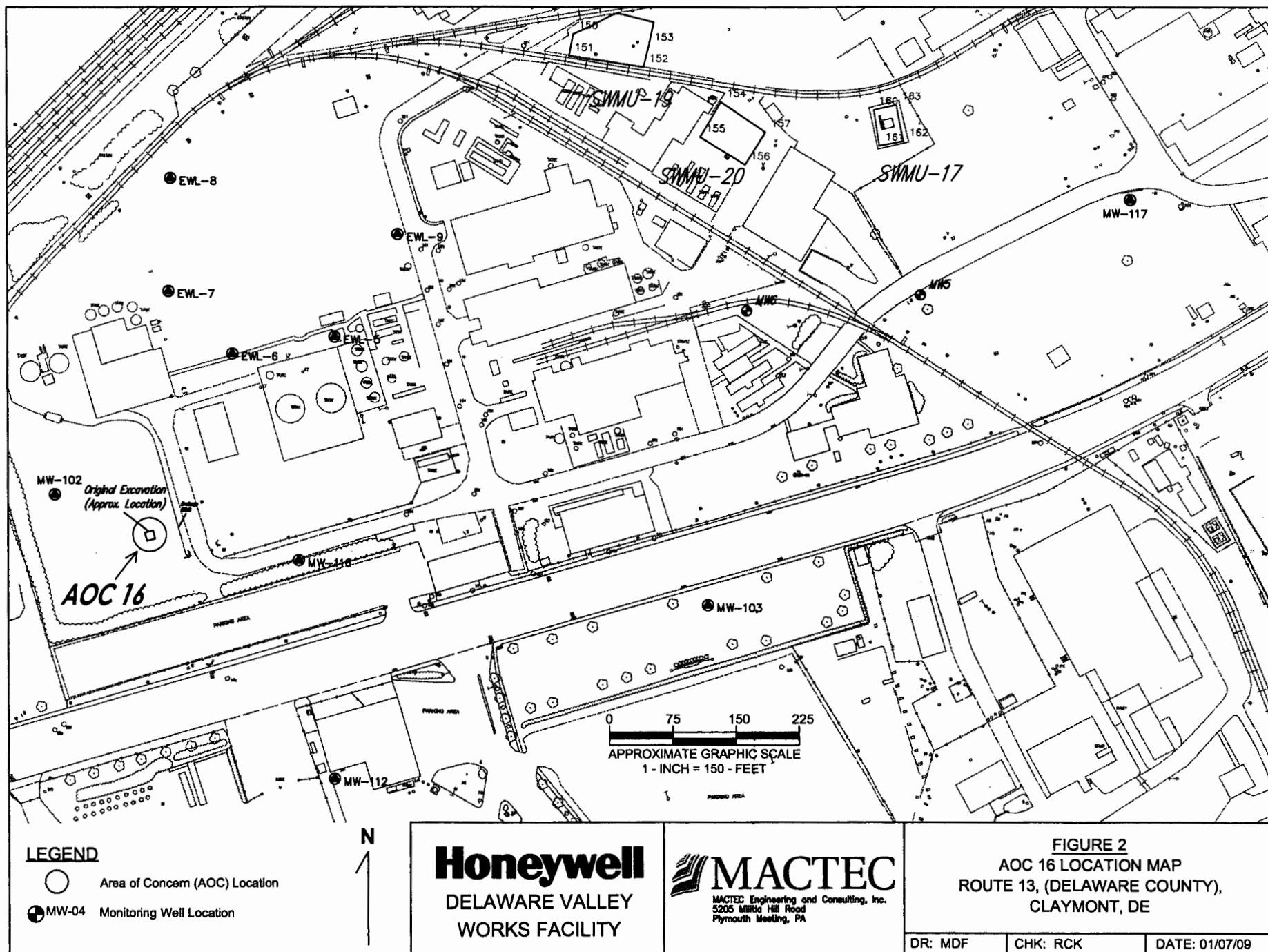
North Plant
Claymont, DE

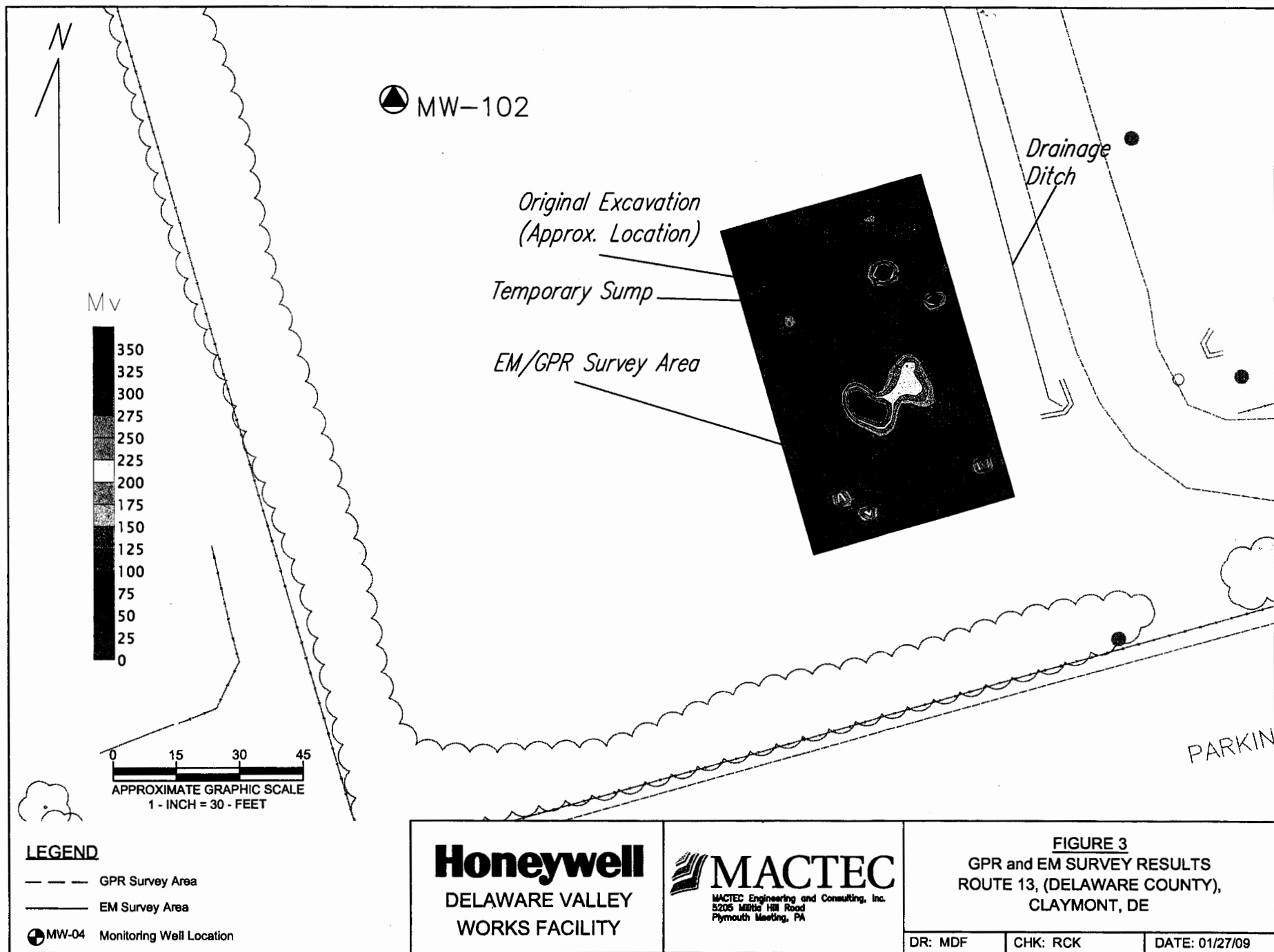


Site Location Map

Project No. 3485080308

Figure 1





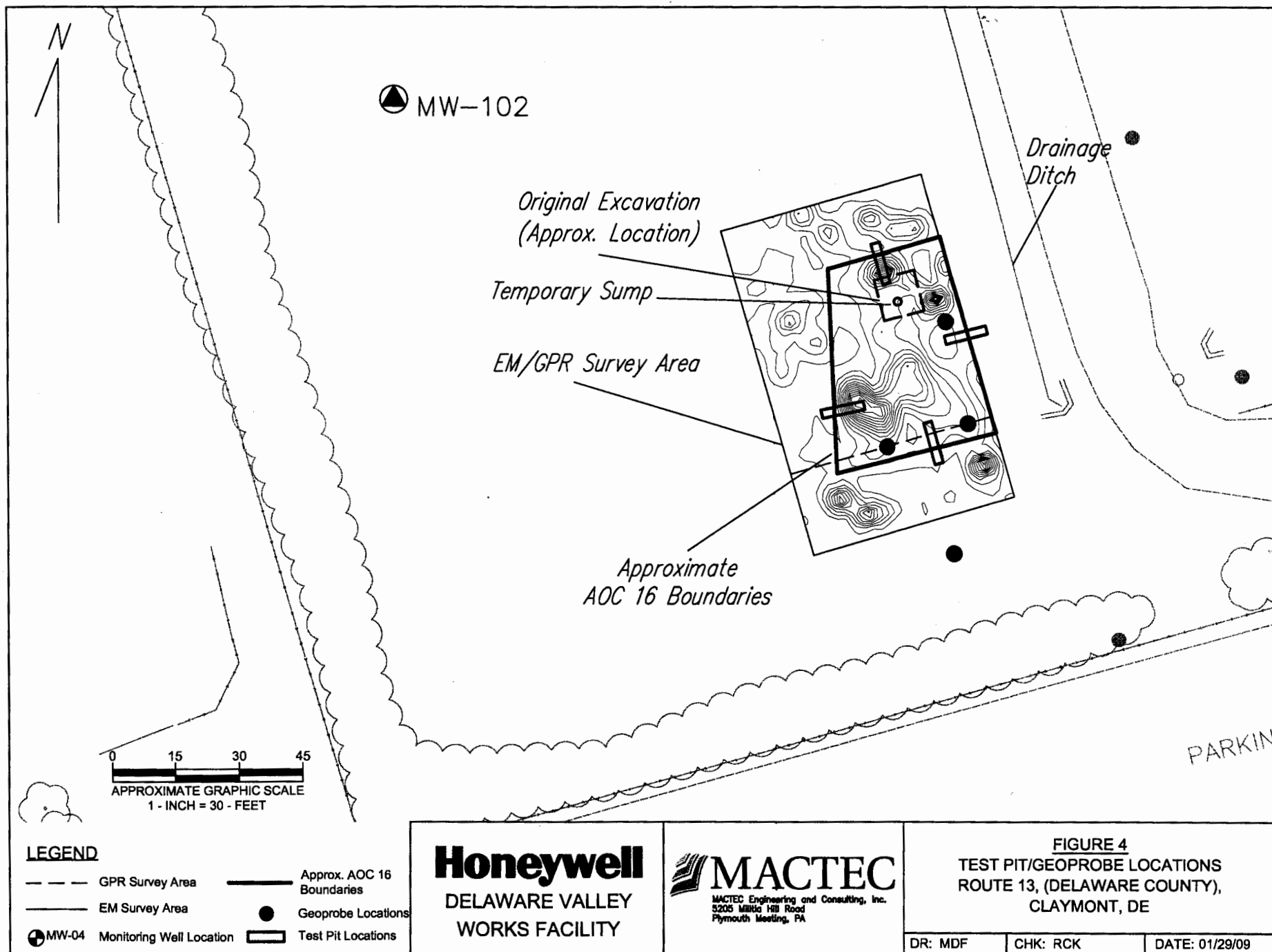


Table 1
Summary of the Analytical Results for Groundwater
Honeywell-Claymont (North Plant)
Claymont, Delaware

Sample ID: Date: Lab Sample ID #: Units:		SAMPLE 1 12/8/2008 JA7373-1 µg/L	DUP-1 12/8/2008 JA7373-2 µg/L
	CAS No.		
Volatile Organic Compounds			
Benzene	71-43-2	33800	36400
Chlorobenzene	108-90-7	19600	28000
Chloroform	67-66-3	350	259
cis-1,2-Dichloroethene	156-59-2	37.5 J	46.8 J
1,2-Dichloroethene (total)	540-59-0	37.5 J	46.8 J
Toluene	108-88-3	48.4 J	52.5 J
Trichloroethene	79-01-6	73.0 J	81.6 J
Vinyl Chloride	75-01-4	ND	36.7 J
Xylene (total)	1330-20-7	ND	112
Semi-Volatile Organic Compounds			
2-Chlorophenol	95-57-8	30.3 J	29.1 J
3&4-Methylphenol	—	57.4	57.6
Phenol	108-95-2	43.9	42.4
2,4,6-Trichlorophenol	88-06-2	51.3 J	50.6 J
Benzo(a)anthracene	56-55-3	10.2 J	13.9 J
Carbazole	86-74-8	13.4 J	15.8 J
Chrysene	218-01-9	10.8 J	16.1 J
1,2-Dichlorobenzene	95-50-1	1020	1130
1,3-Dichlorobenzene	541-73-1	85.4	96.3
1,4-Dichlorobenzene	106-46-7	1360	1480
bis(2-Ethylhexyl)phthalate	117-81-7	44.3	52.5
Fluoranthene	206-44-0	33.1	48.4
2-Methylnaphthalene	91-57-6	10.9 J	14.7 J
Naphthalene	91-20-3	14.2 J	16.3 J
N-Nitrosodiphenylamine	86-30-6	8940	10500
Phenanthrene	85-01-8	57.7	83.5
Pyrene	129-00-0	19.4 J	28.3
1,2,4-Trichlorobenzene	120-82-1	849	1040
Pesticides			
Aldrin	309-00-2	11.2	ND
alpha-BHC	319-84-6	17500	18000
beta-BHC	319-85-7	3350	2890
delta-BHC	319-86-8	7210	6300
gamma-BHC (Lindane)	58-89-9	5010	4900
alpha-Chlordane	5103-71-9	80.9	266
gamma-Chlordane	5103-74-2	113	323
Dieldrin	60-57-1	77.1	265
4,4'-DDD	72-54-8	9990	12800
4,4'-DDE	72-55-9	3780	4630
4,4'-DDT	50-29-3	17700	19700
PCBs	---	ND	ND

Notes:

1. µg/L = micrograms per liter.
2. ND - Analyte was not detected above the laboratory reporting limit.
3. J - Analyte was reported at an estimated concentration between the method detection limit and the laboratory reporting limit.

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Table 2
Summary of the Analytical Results for IDW Soils Disposal Profile
Honeywell-Claymont (North Plant)
Claymont, Delaware

Sample ID: Date: Lab Sample ID #:		WASTE 1 12/22/2008 JA8628-1	WASTE 2 12/22/2008 JA8628-2
	CAS No.		
VOA TCLP Leachate (mg/L)			
Benzene	71-43-2	0.341	2.19
Chlorobenzene	108-90-7	2.41	6.68
Chloroform	67-66-3	0.0064 J	0.0233 J
1,4-Dichlorobenzene	106-46-7	0.462	0.731
Tetrachloroethene	127-18-4	0.0188 J	ND
ABN TCLP Leachate (mg/L)			
1,4-Dichlorobenzene	106-46-7	0.477	0.395
Total PHC (mg/kg)	---	12300	28800
Herbicide TCLP Leachate (mg/L)	---	ND	ND
Pesticides TCLP Leachate (mg/L)			
gamma-BHC (Lindane)	58-89-9	2.89	4.00
PCBs (µg/kg)	---	ND	ND
Metals Analysis, TCLP Leachate (mg/L)			
Barium	---	1.6	<1.0
Cadmium	---	0.027	0.016
Chromium	---	0.027	0.023
General Chemistry (units vary)			
Corrosivity as pH	---	7.39 NC	7.05 NC
Cyanide Reactivity	---	<6.5 mg/kg	<7.1 mg/kg
Ignitability (Flashpoint)	---	>200 °F	>200 °F
Solids, Percent	---	77.40%	70.20%
Sulfide Reactivity	---	<130 mg/kg	<140 mg/kg

Notes:

1. µg/L = micrograms per liter.
2. mg/L = milligrams per liter
3. mg/kg = milligrams per kilograms
4. °F = degrees Fahrenheit
5. ND - Analyte was not detected above the laboratory reporting limit.
6. J - Analyte was reported at an estimated concentration between the method detection limit and the laboratory reporting limit.

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